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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/330,231	06/10/1999	ROBERTO PASSERONE	3964-US	9152

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EXAMINER

KING, JUSTIN

ART UNIT PAPER NUMBER

2111

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/330,231	Applicant(s) PASSERONE ET AL.	
	Examiner Justin I. King	Art Unit 2111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/3/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-9, 11-19, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the admitted prior art J. Akella et al's Synthesizing Converters Between Finite State Protocols and Netravali et al. (U.S. Patent No. 5,680,552).

Referring to claim 1: Synthesizing Converters Between Finite State Protocols discloses two finite state machines and a third finite state machine for a method of transferring valid data (page 411, Section 2). The finite state machine (FSM, also known as automaton) has been long used for data processing simulation; Akella discloses that each protocol's FSM has an input side (page 411, Section 2, line 4), which is the receiving a first and second representation using regular expression; and Akella further discloses that each protocol is specified by their

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corresponding FSM (page 411, Section 2, lines 1-3), which is equivalent to the claimed generating the first and second FSM.

Akella discloses an interface converter between the two different protocols (page 411, Section 2, lines 7-9), but Akella does not explicitly disclose *automatically* synthesizing the interface between the first and second protocols based on the first and second finite automata in the disclosed section.

Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Netravali discloses that it is known to automatically synthesizing an interface between the structurally different first and second protocols based on the first and second finite automata (figures 3 and 4, column 8, lines 29-60, column 9, lines 8-67, column 10, lines 1-60). The messages from two different network protocols with mismatches are the claimed data type with different structures. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Netravali's teaching to the Akella because Netravali enables one to construct the converter in a relatively short time and the converter can be changed quickly to adapt to changes in the protocol specification (column 1, lines 52-55).

Referring to claim 2: Claim 1's argument applies; furthermore, each FSM is designed to move to different states in responding to the input data, such inherent FSM behavior is the claimed automatically corresponding data from the first and second protocol.

Referring to claim 3: Claims 1-2's arguments apply; furthermore, Netravali discloses that it is to know to translate data between two protocols and rectify any mismatches.

Referring to claim 4: Claims 1-2's arguments apply; furthermore, the initial state's identification, first sequence's identification, regular expression's derivative's constructions, and

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equivalent expressions' eliminations are the fundamental and basic steps for building a FSM; and Applicant did not challenge these FSM's basic steps.

Referring to claim 5: Claims 1-2 and 4's arguments apply; furthermore, collecting and integrating data are the fundamental and basic steps for data analysis in a FSM.

Referring to claim 6: Claims 1-2 and 4-5's arguments apply; furthermore, claim 6 is rejected over the claim 3's argument stated above.

Referring to claim 7: Claim 1's argument applies; furthermore, claim 7 is rejected over the claim 3's argument stated above.

Referring to claim 8: Claim 1's argument applies; furthermore, since the protocol converter (third FSM) converts two different protocols (first and second FSMs), either every state or selected states from the first and second FSMs will interface with each other via the third FSM. The initial state received by the third FSM from either the first or second FSM is the claimed selecting the interface state. Since the third FSM converts the messages between the first and second FSMs, it identifies the converting transition upon receiving a converting request; the converting transition is the claimed identifying all outgoing transitions, and the result of the converting transition is the claimed determining a new state for each outgoing transition; and repeating the converting transitions until all pending requests are completed.

Referring to claim 9: Claims 1 and 8's arguments apply; furthermore, the third FSM represents the valid data transfers (specification, page 5, line 4), and in order for any data transfer to be valid, it cannot result in a data inconsistency.

Referring to claim 11: Claim 1's argument applies; furthermore, claim 11 is rejected over the claim 4's argument stated above.

Referring to claim 12: Synthesizing Converters Between Finite State Protocols discloses two finite state machines and a third finite state machine for a method of transferring valid data (page 411, Section 2). The finite state machine (FSM, also known as automaton) has been long used for data processing simulation; Akella discloses that each protocol's FSM has an input side (page 411, Section 2, line 4), which is the receiving a first and second representation using regular expression; and Akella further discloses that each protocol is specified by their corresponding FSM (page 411, Section 2, lines 1-3), which is equivalent to the claimed generating the first and second FSM.

Akella discloses an interface converter between the two different protocols (page 411, Section 2, lines 7-9), and the storage device and processor are inherent in every computer design. Each protocol needs to transmit its own data to processor to be processed, and this inherited mean for transmitting is equivalent to the receiving unit, but Akella does not explicitly disclose *automatically* synthesizing the interface between the first and second protocols based on the first and second finite automata in the disclosed section.

Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Netravali discloses that it is known to automatically synthesizing an interface between the structurally different first and second protocols based on the first and second finite automata (figures 3 and 4, column 8, lines 29-60, column 9, lines 8-67, column 10, lines 1-60). The messages from two different network protocols with mismatches are the claimed data type with different structures. Hence, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adapt Netravali's teaching to the Akella because Netravali enables one to

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construct the converter in a relatively short time and the converter can be changed quickly to adapt to changes in the protocol specification (column 1, lines 52-55).

Referring to claim 13: Claim 12's argument applies; furthermore, claim 13 is rejected over the claim 2's argument stated above.

Referring to claim 14: Claims 12-13's arguments apply; furthermore, the third FSM's converting function between different protocols is equivalent to the translation unit.

Referring to claim 15: Claims 12-13's arguments apply; furthermore, claim 15 is rejected over the claim 4's argument stated above.

Referring to claim 16: Claims 12-13 and 15's arguments apply; furthermore, claim 16 is rejected over the claim 5's argument stated above.

Referring to claim 17: Claim 12's argument applies; furthermore, claim 17 is rejected over the claim 14's argument stated above.

Referring to claim 18: Claim 18's argument applies; furthermore, claim 18 is rejected over the claim 8's argument stated above.

Referring to claim 19: Claim 19's argument applies; furthermore, claim 19 is rejected over the claim 9's argument stated above.

Referring to claim 21: Claim 1's argument applies; furthermore, Avella and McMillan disclose a mean to generate an interface for converting different protocols. The converting processing is converting one or more permitted operations of the first and second automata.

Referring to claim 22: Claim 1's argument applies.

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4. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akella in view of Netravali, and in further view of Al-Karmi et al. (U.S. Patent No. 5,862,251) and Mano's Computer System Architecture.

Referring to claim 10: Claims 1 and 8's arguments apply; as stated in the claim 1's argument, the identifying the non-deterministic transition and determine a transition state for each input are fundamental practices in FSM's construction. However, Akella and Netravali do not explicitly mention converting the non-deterministic transition to deterministic transitions and the associated priority. The Computer System Architecture, a popular academic textbook, discloses that it is a well-known practice to implement the priority setting in each system. Al-Karmi discloses a FSM application, wherein it discloses that it is known to identify and to convert the non-deterministic transition to multiple deterministic transitions (column 5, lines 8-9). Thus, it would have been obvious to one having ordinary skill in the computer art at the time Applicant made the invention to adopt the practices of and priority and converting the NFS to FS into the Akella and Netravali because it enables the system to allocate resource to tasks according to their time sensitivities, and to eliminate state transition uncertainty.

Referring to claim 20: Referring to claim 1: Synthesizing Converters Between Finite State Protocols discloses two finite state machines and a third finite state machine for a method of transferring valid data (page 411, Section 2). The finite state machine (FSM, also known as automaton) has been long used for data processing simulation; Akella discloses that each protocol's FSM has an input side (page 411, Section 2, line 4), which is the receiving a first and second representation using regular expression; and Akella further discloses that each protocol is specified by their corresponding FSM (page 411, Section 2, lines 1-3), which is equivalent to the claimed generating the first and second FSM.

Akella discloses an interface converter between the two different protocols (page 411, Section 2, lines 7-9), which is the claimed third representation, but Akella does not explicitly disclose *automatically* synthesizing the interface between the first and second protocols based on the first and second finite automata in the disclosed section.

Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Netravali discloses that it is known to automatically synthesizing an interface between the structurally different first and second protocols based on the first and second finite automata (figures 3 and 4, column 8, lines 29-60, column 9, lines 8-67, column 10, lines 1-60). The messages from two different network protocols with mismatches are the claimed data type with different structures.

Identifying the non-deterministic transition and determine a transition state for each input are fundamental practices in FSM's construction. However, Akella and Netravali do not explicitly disclose eliminating the non-deterministic transition. The Computer System Architecture, a popular academic textbook, discloses that it is a well-known practice to implement the priority setting in each system. Al-Karmi discloses a FSM application, wherein it discloses that it is known to identify and to convert the non-deterministic transition to multiple deterministic transitions (column 5, lines 8-9), which eliminates the non-deterministic transitions.

Thus, it would have been obvious to one having ordinary skill in the computer art to adopt the practices of Netravali and priority and converting the NFS to FS into the Akella because Netravali enables one to construct the converter in a relatively short time and the converter can be changed quickly to adapt to changes in the protocol specification (column 1, lines 52-55), and the practices of the priority and FS conversion enable the system to allocate

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resource to tasks according to their time sensitivities, and to eliminate state transition uncertainty.

Response to Arguments/Interview Request

5. In responding to Applicant's interview request on 9/22/2004: The interview request does not contain issues with sufficient substance, which would indicate that an interview would advance prosecution. The interview request should address any issue regarding particular limitation or interpretation of the prior art, claim, or any proposed amendments. Phone calls were made to Stuart West, the Applicant's Representative, on 10/19/2004 and 10/25/2004 to discuss the deficiency in the interview request. No interview was conducted as a result.

6. In response to Applicant's argument that Netravali does not disclose automatically synthesizing an interface and automatically corresponding data (Remark, arguments A, B, and C), and Applicant cites the Netravali's column 1, lines 31-35, where it states that "automatic generation of systems to overcome the architectural mismatches is not foreseeable in the near future" (Remark, bottom of the page 9): Netravali does disclose automatically synthesizing an interface. As cited by the Applicant, Netravali states that since a considerable judgment, trade-off analysis, and the decision-making are required to overcome architectural mismatches, the automatic generation of **systems/protocols** to overcome the architectural mismatches is not foreseeable in the near future. In the following paragraphs, Netravali explains how the **protocol converters** are used to automatically translate messages from one protocol to another to rectify any mismatches (column 1, lines 37-67, column 2, lines 1-7). Netravali further discloses how to automatically synthesize the protocol convert (figures 3 and 4, column 8, lines 29-60, column 9, lines 8-67, column 10, lines 1-60).

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7. In response to Applicant's argument that Avella's invalid/useless operations are not non-deterministic transitions (Remark, page 12, last 2 lines): The argument was previously presented and the previous Office Action has responded to this argument with a revised Office Action and a newly added prior art Al-Karmic. The prior art Al-Karmic discloses that it is known to eliminate the non-deterministic transitions by converting the non-deterministic transition to multiple deterministic transitions (column 5, lines 6-13).

8. In response to Applicant's argument that the prior art does not disclose the "automatically eliminating non-determinisms" (Remark, page 13, Argument E): The prior art Al-Karmic teaches that it is known to eliminate the non-deterministic transitions by converting the non-deterministic transition to multiple deterministic transitions (column 5, lines 6-13). Furthermore, Netravali discloses that it is known to automatically synthesize the protocol converter (column 1, lines 36-67, column 2, lines 1-7). Netravali further discloses how to automatically synthesize the protocol convert (figures 3 and 4, column 8, lines 29-60, column 9, lines 8-67, column 10, lines 1-60).

9. In response to Applicant's argument that all of the prior art's permitted operations have to be specified by a user (Remark, page 14, last paragraph): Netravali discloses an **automatic** generation of protocol converter based on formal specifications (column 1, lines 49-51), and Netravali further discloses how to automatically synthesize the protocol convert (figures 3 and 4, column 8, lines 29-60, column 9, lines 8-67, column 10, lines 1-60). Hence, Netravali does disclose an automatic generation of protocol converter, and does not have to be specified by a user as Applicant argues.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

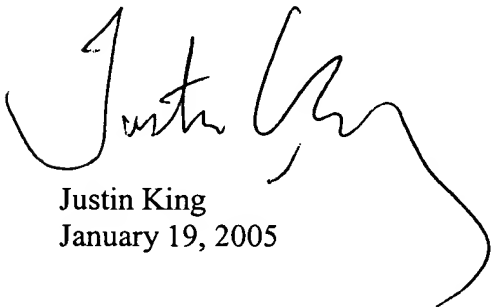
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin I. King whose telephone number is 571-272-3628. The examiner can normally be reached on Monday through Friday, 9:00 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632 or on the central telephone number, (571) 272-2100. The fax

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phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.



Justin King
January 19, 2005

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